CLAIMS

1. A method of isolating one or more of a memory B cell and a plasma cell, the method comprising:

contacting a population of cells comprising one or more of a mature B cell and a B cell progenitor with a composition comprising IL-21, thereby inducing differentiation of at least one of the mature B cell and the B cell progenitor into one or more of a memory B cell and a plasma cell; and

isolating or purifying one or more of the memory B cell and the plasma cell.

2. The method of claim 1, wherein the population of cells comprises bone marrow derived cells or peripheral blood cells.

3. The method of claim 1, wherein the population of cells comprises a plurality of isolated or purified cells, which isolated or purified cells comprise one or more of immature B cells and mature B cells.

4. The method of claim 1, wherein the population of cells comprises human cells.

5. A method for enhancing an immune response in a subject, comprising

contacting a population of cells comprising one or more of a mature B cell and a B cell progenitor with a composition comprising IL-21, thereby inducing differentiation of at least one of the mature B cell and the B cell progenitor into one or more of a memory B cell and a plasma cell;

isolating or purifying one or more of the memory B cell and the plasma cell; and

introducing at least one of the memory B cell and the plasma cell into the subject, thereby enhancing the immune response.

6. The method of claim 5, comprising contacting the population of cells with the composition comprising IL-21 by administering the composition comprising IL-21 directly to a subject.

7. The method of claim 5, comprising contacting the population of cells with the composition comprising IL-21 *ex vivo*.

8. The method of claim 5, wherein the subject is a human subject.

9. A method for enhancing an immune response in a subject, the method comprising:

(a) isolating a population of cells comprising one or more of a mature B cell and a B cell progenitor from a subject;

(b) contacting the population of cells *ex vivo* with a composition comprising IL-21 or an agonist thereof, thereby inducing differentiation of at least one of the mature B cell and the B cell progenitor into one or more of a memory B cell and a plasma cell;

(c) isolating the memory B cell, the plasma cell, or both; and

(d) introducing at least one of the memory B cell and the plasma cell into a subject.

10. The method of claim 9, further comprising contacting the population of cells with at least one composition comprising an antigen.

11. The method of claim 10, wherein the antigen comprises a viral antigen, a bacterial antigen, or an antigen from a parasite.

12. The method of claim 9, wherein the B cell progenitor is an immature B cell.

13. A method for treating a subject with a condition comprising a specific deficiency of at least one of memory B cells and plasma cells, comprising administering to the subject with the deficiency of at least one of memory B cells and plasma cells a therapeutically effective amount of IL-21 or an agonist thereof, thereby ameliorating a sign or symptom of the deficiency.

14. The method of claim 13, wherein the condition comprises an immunodeficiency.

15. The method of claim 13, the deficiency comprising a reduction in number or function of at least one of the memory B cells and plasma cells.

16. The method of claim 15, wherein the deficiency is a post-bone marrow transplantation deficiency.

17. The method of claim 13, comprising administering an amount of IL-21 or an agonist thereof sufficient to increase the number or proportion of at least one of memory B cells or plasma cells.

18. The method of claim 13, comprising administering the IL-21 or agonist thereof by

a) treating a population of cells comprising at least one of a mature B cell and a B cell progenitor ex vivo, thereby inducing differentiation of at least one B cell into one or more of a memory B cell and a plasma cell;

b) isolating the memory B cell, the plasma cell, or both; and

c) introducing at least one of the memory B cell and the plasma cell into the subject.

19. The method of claim 18, wherein the population of cells comprises one or more of a heterologous mature B cell or a heterologous B cell progenitor.

20. The method of claim 13, wherein the subject is a human subject.

21. A method for identifying an agent with a physiological effect on differentiation of one or more of a memory B cell and a plasma cell, the method comprising:

a) contacting an isolated population of cells exposed to a composition comprising IL-21 with at least one agent, wherein the population of cells comprises at least one B cell progenitor; and

b) detecting at least one physiological effect of the agent on memory B cell differentiation, plasma cell differentiation, or both.

22. The method of claim 21, wherein the physiological effect is inhibition of differentiation of one or more of the memory B cell and the plasma cell from the B cell progenitor.

23. The method of claim 21, comprising contacting each of a plurality of subsets of the population of cells with a different agent, each of which agents is a member of a library of compositions.

24. The method of claim 21, wherein the B cell progenitor is an immature B cell.

25. A method of identifying an agent that inhibits an activity of IL-21, comprising

contacting a cell with at least one agent; and

detecting a decrease in the production or activity of at least one of Blimp-1 and Bcl-6 relative to a control cell;

thereby identifying an agent that inhibits an activity IL-21.

26. The method of claim 25, wherein the agent decreases the production or activity of Blimp-1 or Bcl-6.

27. The method of claim 25, wherein the cell is contacted with IL-21.

28. The method of claim 25, wherein the agent is an antibody that specifically binds Blimp-1 or Bcl-6.

29. The method of claim 25, wherein the control is a cell not contacted with the agent.

30. A method for inducing differentiation of a B cell progenitor into at least one of a memory B cell and a plasma cell, the method comprising:

contacting a population of cells comprising a B cell progenitor with an agent that activates at least one of JAK1, JAK3, STAT5A or STAT5B; and

isolating one or more of a memory B cell and a plasma cell;

thereby inducing differentiation of at least one mature B cell into one or more of a memory B cell and a plasma cell.

31. The method of claim 30, wherein the agent is IL-21.